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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/632,643

08/01/2003

Roger Harquail French

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E I DU PONT DE NEMOURS AND COMPANY
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EXAMINER

CHACKO DAVIS, DABORAH

ART UNIT

PAPER NUMBER

1756

MAIL DATE

DELIVERY MODE

05/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/632,643

Applicant(s)

FRENCH ET AL.

Examiner

Daborah Chacko-Davis

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-20,22-33,35-46 and 48-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11,17,18,22,25,31,35-37,44,48,51-56 is/are rejected.
- 7) ☒ Claim(s) 12-16,19,20,23,24,26-30,32,33,38-43,45,46,49 and 50 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 11, 25, and 37, are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 4,508,814 (Sakurai et al., hereinafter referred to as Sakurai).

Sakurai, in the abstract, in col 3, lines 1-24, and lines 55-67, in col 6, lines 1-48, discloses preparing an organic film composition of the claimed absorption and extracting photochemically active species via exposure to radiation, and performing exposure to the composition comprising the claimed perfluoroalkyl radical to form an imaged pattern (claims 11, 25, and 37).

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 53-56, are rejected under 35 U.S.C. 102(e) as being anticipated by U. S. Patent No. 6,824,930 (Wheland et al., hereinafter referred to as Wheland).

Wheland, in the abstract, in col 2, lines 63-67, in col 3, lines 1-22, and lines 54-59, in col 6, lines 60-67, in col 25, lines 29-49, discloses an organic composition (optical element) that has an absorbance/micrometer of < 1 in a wavelength range of 140 to 186 nm, and is subjected to extracting means, wherein an optical element (optically transparent composition of absorption less than 1, i.e., transparent) is disposed between the source and the receptor, and disposing in the path of the emitted radiation (140nm to 186nm em radiation) a receptor (substrate or target on which an optical image is formed) responsive to the pattern of electromagnetic radiation so as to form a pattern (optical image) on the receptor, said optical element (optically transparent composition) includes an amorphous polymer comprising a copolymer of linear hydrofluorocarbons (includes photochemically active species) having at least 2 carbon atoms, no adjacent C-H bonds longer than two (CH-CH) (i.e., $(CH_2)_n$, where $n=1$), no CH_2-CH_3 radicals (i.e., only monomeric units of $CX_2=CH_2$), no C-F bonds longer than 6 (i.e., $(CF_2)_n$, where $n=6$) (claim 53). Wheland, in col 15, lines 55-67, in col 16, lines 1-19, in col 30, lines 49-56, discloses the claimed organic composition with photochemically active species (has absorbance in UV) that is dried under nitrogen and under a pump vacuum, and includes oxygen and moisture (solvent) in a very small amount (less than 1ppm) (claims 54-55). Wheland, in col 5, lines 56-67, in col 6, lines 1-26, discloses that the transparent fluoro polymer composition includes fluoroethers including perfluoro alkyl radicals, perfluoroalkenyl radicals etc. (claim 56).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 18, 31, and 44, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 4,508,814 (Sakurai et al., hereinafter referred to as Sakurai) in view of U. S. Patent No. 4,975,300 (Deviny).

Sakurai is discussed in paragraph no. 2.

The difference between the claims and Sakurai is that Sakurai does not disclose that the compound (optically transparent composition) with photoactive species includes perfluoro-N-methylmorpholine (claims 18, 31, and 44).

Deviny, in col 4, lines 10-27, and in col 6, lines 11-34, discloses that the perfluorochemical liquid (that are also photoactive) include perfluoro-4-methylmorpholine.

Therefore, it would be obvious to a skilled artisan to modify Sakurai by employing the perfluoro compound suggested by Deviny because Deviny, in col 6, lines 23-50, and in col 8, lines 1-4, discloses that the claimed morpholine is preferable because it is inert and available and cost effective as an immersion fluid composition.

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7. Claims 22, and 48, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 4,508,814 (Sakurai et al., hereinafter referred to as Sakurai) in view of U. S. Patent No. 4,678,850 (Hatzakis et al., hereinafter referred to as Hatzakis).

Sakurai is discussed in paragraph no. 2.

The difference between the claims and Sakurai is that Sakurai does not disclose that the compound is subjected to freeze-thaw fractional distillation (claims 22, and 48).

Hatzakis, in col 2, lines 20-41, and in col 4, lines 4-22, discloses a photoactive compound such as halogenated organic compound that is subjected freeze thawing and fractional distillation.

Therefore, it would be obvious to a skilled artisan to modify Sakurai by employing the method of freeze thawing and fractional distilling the halogenated polymer as taught by Hatzakis because Hatzakis, in col 4, lines 4-22, discloses that performing fractional distillation enables the removal of deleterious impurities, and freeze-thawing enables the removal of dissolved air/oxygen in the monomer thereby preventing weak linkages in the polymer.

8. Claims 35-36, and 51-52, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 4,508,814 (Sakurai et al., hereinafter referred to as Sakurai) in view of "Immersion Lithography at 157nm", Journal of Vacuum Science and Technology, B 19(6), 2353-2356 (2001) (Switkes et al., herein after referred to as Switkes).

Sakurai is discussed in paragraph no. 2.

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The difference between the claims and Sakurai is that Sakurai does not disclose that at least one of said radiation source and said target are immersed in the optically transparent composition (claims 35, and 51). Sakurai does not disclose that the both the radiation source and the target are immersed in the optically transparent composition (claims 36, and 52).

Switkes, in the introduction, and in the paragraph II (Index matching medium), and on page 2355, figure 5, discloses that the optical source and the medium (target) are immersed in an optically transparent composition (absorption of less than 1nm at 157nm).

Therefore, it would be obvious to a skilled artisan to modify Sakurai by employing the method of immersing the source and the target in an optically transparent medium (liquid) as taught by Switkes because Switkes, in the abstract, on page 2353, discloses that using immersion lithography (light source and substrate immersed in an index matching fluid at 157nm lithography system) enables an enhancement of resolution of 40% without radical changes in lasers, optics or resist technology, and enables patterning dense resist features of about 30nm.

Allowable Subject Matter

9. Claims 12-16, 19-20, 23-24, 26-30, 32-33, 38-43, 45-46, 49-50, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments filed February 20, 2007, have been fully considered but they are not persuasive. The 102 and 103 rejections of Sakurai et al., made in the previous office action (paper no. 20061016) are maintained. Applicant's arguments, see Remarks, filed February 20, 2007, with respect to Wheland et al have been fully considered and are persuasive. The 102 rejection of Wheland et al., made over claims 11-17, 19-21,23-30, 32-34,37-43,45-47,and 49-50, has been withdrawn.

A) Applicants argue that Wheland does not disclose an organic composition.

Wheland teaches the same composition recited in the independent claim such as the cyclic hydrocarbons and fluorocarbons see col 6, lines 53-58. The claim recites an organic composition. The composition (polymeric or not) disclosed by Wheland is organic and has the claimed absorption.

B) Applicants argue that Sakurai teaches a perfluoroalkyl composition, and that the claims do not recite the perfluoroalkyl composition and are limited to the use of a fluorinated hydrocarbons, etc.

The claims recite a fluoroalkyl radical. Sakurai teaches the use of a perfluoroalkyl composition. A perfluoroalkyl compound is a fluorinated alkyl composition i.e., fluorinated hydrocarbon.

C) Applicants argue that Deviny merely teaches heating by immersion in saturated vapors and that the claimed compound is an immersion fluid composition and that Deviny does not teach that the composition is optically transparent.

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Deviny is depended upon to disclose the use of the claimed optically transparent compound as an optically transparent composition. Deviny teaches the use of the claimed perfluoro compound such as perfluoro-N-methylmorpholine, and is therefore inherently transparent, and is positioned as an immersion medium between the radiant source and the receptor (substrate).

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

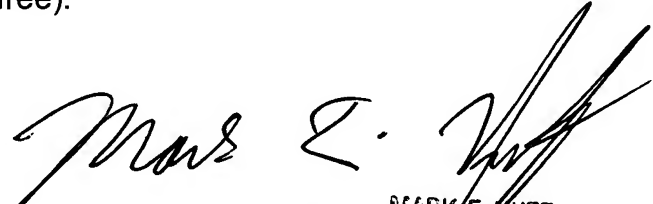
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

May 8, 2007.


MARK E. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700